

PART A / BAHAGIAN A

- (1). (a). Safety and health of employee is the top priority for AAS Sdn. Bhd. They ensured all the employee underwent safety briefing during induction training. However, the rate of accident and near miss reporting in 2018 was not reduced. Therefore, you required to design a safety program to create awareness and safe work environment at workplace. Explain in detail the design that you would like to propose.

Keselamatan dan kesihatan pekerja menjadi keutamaan tertinggi bagi AAS Sdn Bhd. Mereka memastikan semua pekerja mengikuti taklimat keselamatan semasa latihan induksi. Walaubagaimanapun, kadar kemalangan dan 'near miss' dilaporkan pada tahun 2018 tidak berkurang. Maka, anda dikehendaki untuk merekabentuk program keselamatan bagi mewujudkan kesedaran dan persekitaran kerja yang selamat di tempat kerja. Terangkan dengan jelas rekabentuk yang anda cadangkan.

(40 marks/markah)

- (b). You work as an engineer in the car manufacturing company. There are very high possibility of machines and equipment used are dangerous to the workers. Explain, how do you justify whether the machines and the equipment used are dangerous during the operation?

Anda merupakan seorang jurutera di kilang pembuatan kereta. Terdapat kebarangkalian yang tinggi mesin dan peralatan yang digunakan merbahaya kepada pekerja. Terangkan bagaimana anda mengenalpasti sama ada mesin dan peralatan itu merbahaya semasa operasinya?

(30 marks/markah)

- (c). Most of the road accidents occur due to unsafe committed by drivers. Can the same conclusion be made about the workers in the industrial sector? Give explanation for your answer.

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Kebanyakan kemalangan jalan raya berlaku disebabkan kelakuan tidak selamat yang diamalkan oleh pemandu. Bolehkah kesimpulan yang sama dibuat tentang pekerja di sektor perindustrian? Beri penjelasan ringkas untuk jawapan anda.

(30 marks/markah)

- (2). (a). In manufacturing industries, safety supervisor plays an important role in ensuring the safety and health of the staff while performing their job. Elaborate **FOUR (4)** key responsibilities of a safety supervisor at workplace as stated in OSHA 1994.

*Dalam industri pembuatan, penyelia keselamatan memainkan peranan penting dalam memastikan keselamatan dan kesihatan kakitangan semasa menjalankan tugas mereka. Huraikan **EMPAT (4)** tanggungjawab utama penyelia keselamatan di tempat kerja seperti yang dinyatakan dalam OSHA 1994.*

(20 marks/markah)

- (b). There are various Acts and Regulations related to environmental, health and safety in Malaysia. Each Act and Regulations under it are enforced by a government body.

Terdapat pelbagai Akta dan Peraturan yang berkaitan dengan alam sekitar, kesihatan dan keselamatan di Malaysia. Setiap Akta dan Peraturan di bawahnya dikuatkuasakan oleh badan kerajaan.

- (i). State **FIVE (5)** examples of the enforcement body (including the Ministry) governing these Acts and Regulations related to environmental, health and safety in Malaysia.

*Nyatakan **LIMA (5)** contoh badan penguatkuasaan (termasuk Kementerian) yang mentadbir Akta-akta dan Peraturan-peraturan berkaitan dengan alam sekitar, kesihatan dan keselamatan di Malaysia.*

(20 marks/markah)

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- (ii). Give **ONE (1)** example of the Acts governed by **each** of the enforcement body listed in (i) above.

*Berikan **SATU (1)** contoh Akta yang ditadbir oleh setiap badan penguatkuasaan yang disenaraikan dalam (i) di atas.*

(10 marks/markah)

- (c). On July 11, 1992, a Malaysian court ordered Asian Rare Earth (ARE), which is 35% owned by Mitsubishi Kasei in Japan, to immediately close its plant in Bukit Merah. The court also ordered the company to remove all its radioactive waste and toxic chemicals from the factory. ARE was a factory that processes monazite to produce yttrium and other rare earth chlorides used in colour television screens and electronic parts. In the process, radioactive thorium is produced as waste.

In the case of its Bukit Merah plant, this waste was dumped virtually in the villagers' backyard, without any signs or fences to protect them. The nearby residents have complained about the smell and smoke from the factory that stinks so much, they had difficulty breathing and cried because of it. It had been reported that the processing of radioactive materials at Bukit Merah had been associated with 8 cases of leukemia and 7 deaths. The Malaysian government has invited a few specialist teams to visit the factory. It was found that the waste channel was totally not safe for the public, where the radiation levels were 800 times the permitted maximum level. The ARE case had been called "Japanese pollution export" by environmentalists.

Explain how this case relates with the requirements of Acts and Regulations related to environmental, health and safety in Malaysia. (Appendix A is given as reference)

...5/-

Pada 11 Julai 1992, mahkamah Malaysia telah mengarahkan Asian Rare Earth (ARE), yang mana 35% dimiliki oleh Mitsubishi Kasei di Jepun, untuk segera menutup kilangnya di Bukit Merah. Mahkamah juga mengarahkan syarikat tersebut mengeluarkan semua sisa radioaktif dan bahan kimia beracun dari kilang itu. ARE merupakan sebuah kilang yang memproses monazit untuk menghasilkan yttrium dan klorida "rare earth" lain yang digunakan dalam skrin televisyen warna dan bahagian elektronik. Dalam proses ini, torium radioaktif dihasilkan sebagai sisa.

Untuk kes kilang Bukit Merah, sisa-sisa tersebut dibuang di kawasan belakang tempat tinggal penduduk kampung, tanpa sebarang tanda atau pagar untuk melindungi mereka. Penduduk di kawasan berdekatan telah mengadu tentang bau dan asap yang melampau dari kilang, menyebabkan mereka mengalami kesukaran bernafas dan mata berair. Laporan menyatakan bahawa pemprosesan bahan radioaktif di Bukit Merah telah dikaitkan dengan 8 kes leukemia dan 7 kematian. Kerajaan Malaysia telah menjemput beberapa pasukan pakar untuk melawat kilang tersebut. Didapati bahawa saluran sisa tersebut tidak selamat untuk orang ramai, di mana tahap radiasi telah mencecah 800 kali lebih tinggi daripada tahap maksimum yang dibenarkan. Kes ARE telah digelar "eksport pencemaran Jepun" oleh pejuang alam sekitar.

Terangkan perkaitan kes ini dengan Akta-akta dan Peraturan-peraturan yang berkenaan dengan alam sekitar, kesihatan dan keselamatan di Malaysia. (Lampiran A diberikan sebagai rujukan)

(50 marks/markah)

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PART B / BAHAGIAN B

- (3). (a). Compare the duties of employers/owners/contractors with the duties of Engineers when it comes to occupational safety and health in their workplace.

Bandingkan kewajipan majikan / pemilik / kontraktor dengan tugas-tugas Jurutera apabila berkaitan dengan keselamatan dan kesihatan pekerjaan di tempat kerja mereka.

(40 marks/markah)

- (b). Discuss SIX (6) ways in which an employer can promote and implement a positive safety and health culture in the workplace.

Bincangkan ENAM (6) cara yang mana majikan dapat mempromosi dan melaksanakan budaya keselamatan dan kesihatan yang positif di tempat kerja.

(30 marks/markah)

- (c). Quality, Occupational Safety and Health policy and training policy are **TWO MAJOR POLICY** that need to be implemented in the company. Elaborate in detail both of the policies based on your knowledge and industrial experience during internship.

*Dasar kualiti, keselamatan dan kesihatan pekerjaan dan dasar latihan adalah **DUA DASAR UTAMA** yang perlu dilaksanakan dalam syarikat. Huraikan secara terperinci kedua-dua dasar tersebut berdasarkan pengetahuan dan pengalaman anda semasa menjalani latihan industri.*

(30 marks/markah)

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- (4). (a). Outline the importance of effective communication in relation to health and safety in workplace.

Gariskan kepentingan komunikasi yang berkesan berhubung dengan kesihatan dan keselamatan di tempat kerja.

(30 marks/markah)

- (b). Outline what employees can do to ensure that their own actions or inactions do not risk themselves or others.

Gariskan apa yang boleh dilakukan oleh kakitangan untuk memastikan tindakan atau tindak balas mereka membawa risiko kepada dirinya sendiri dan orang lain.

(30 marks/markah)

- (c). Identify FOUR (4) occasions when an organization may need an external for expert help or advice to perform specific safety and health related tasks.

Kenal pasti EMPAT (4) kejadian di mana sesebuah organisasi kemungkinan memerlukan bantuan pakar luar atau nasihat untuk menjalankan tugas berkaitan keselamatan dan kesihatan yang khusus.

(40 marks/markah)

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PART C / BAHAGIAN C

- (5). (a). Define accident and near miss and give examples of each case at the workplace.

Takrifkan kemalangan dan 'near miss' dan beri contoh-contoh setiap kes di tempat kerja

(10 marks/markah)

- (b). There are THREE (3) important elements to be considered when giving a task to the workers. Describe the following three elements :

Terdapat TIGA (3) unsur penting untuk dipertimbangkan apabila memberi tugas kepada pekerja. Huraikan tiga elemen berikut :

- (i). Worker capacity

Keupayaan pekerja

(10 marks/markah)

- (ii). Task demands

Tuntutan kerja

(10 marks/markah)

- (iii). Working environment

Persekitaran perkerjaan

(10 marks/markah)

- (c). An electronics company based in Penang has been operated for the past 10 years with 1000 employees. In 2018, two accidents happened:

Sebuah syarikat elektronik bertempat di Pulau Pinang telah beroperasi sejak 10 tahun lepas dengan 1000 pekerja. Pada 2018, dua kemalangan telah berlaku :

- 1st accident : One employee had the front portion of the her finger (right hand) severed during a mechanical assembly process.

Kemalangan pertama : Seorang pekerja mengalami kecederaan parah di bahagian hadapan jari (tangan kanan) semasa proses pemasangan mekanikal.

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- 2nd accident : Another employee accidentally slips on the floor during a maintenance process and his back bone was severely injured.

Kemalangan kedua : Seorang pekerja lain dengan tidak sengaja tergelincir semasa proses penyelenggaraan menyebabkan tulang belakangnya mengalami kecederaan teruk.

As a OSH officer in the company, you have been assigned to give a complete report on the accidents by including the following inputs:

Sebagai seorang pegawai keselamatan dan kesihatan pekerjaan disyarikat anda telah ditugaskan untuk menghasilkan laporan lengkap mengenai kemalangan dengan mengambil kira perkara-perkara berikut:

- (i). Discuss the accident process including investigation of accident, causes of accident and estimation of cost involved.

Jelaskan proses kemalangan termasuk siasatan kemalangan, sebab kemalangan dan anggaran kos terlibat.

(25 marks/markah)

- (ii). Suggest the safety measures to be implemented to prevent the accidents from reoccurring.

Cadangkan langkah keselamatan yang perlu dilaksanakan bagi mengelakkan kemalangan berulang.

(20 marks/markah)

- (iii). Explain ways to improve the safety awareness among the workers?
Jelaskan cara meningkatkan kesedaran keselamatan dikalangan pekerja-pekerja

(15 marks/markah)

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- (6). (a). Figure 1 shows the storage of different gas cylinders in a storeroom. Identify the hazards posed as shown in the Figure 1. Thereafter, classify the hazards and recommend appropriate control measures to mitigate the hazards.

Rajah 1 di bawah menunjukkan penyimpanan silinder-silinder gas yang berlainan di dalam bilik stor. Kenalpastikan hazard yang ditunjukkan dalam Rajah 1. Kemudian, klasifikasikan hazard tersebut dan syorkan langkah kawalan yang sesuai untuk mengurangkan hazard.



Figure 1 : Storge of different gas cylinders in a storeroom.

Rajah 1 : Penyimpanan silinder-silinder gas yang berlainan di dalam bilik stor.
(15 marks/markah)

- (b). Safety Data Sheets (SDSs) are a widely used in manufacturing for showing information on chemicals, chemical compounds and chemical mixtures.

Safety Data Sheets (SDSs) digunakan secara meluas dalam pembuatan untuk menunjukkan maklumat mengenai bahan kimia sebatian kimia dan campuran kimia.

- (i) There are 16 key items in an SDS. List **FIVE (5)** of them.
*Terdapat 16 perkara utama dalam SDS. Senaraikan **LIMA (5)** daripadanya.*

(15 marks/markah)

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- (ii). Where should the SDS be stored/placed?

Di manakah SDS sepatutnya disimpan / diletak?

(15 marks/markah)

- (c). Before a worker enter the confined empty vessel, the supervisor spoke to him, "You'll be fine as long as you wear your respirator". "There might be some residual toxic gas left over, but there won't be much. If you don't breathe it, the gas can't hurt you. Get in, do the inspection, and get out. It shouldn't take more than 5 minutes".

Sebelum seorang pekerja memasuki kebuk kosong yang terkurung, penyelia memberitahunya "Tiada apa akan berlaku kepada anda selagi anda memakai alat pernafasan. "Mungkin terdapat sedikit lagi sisa gas toksik yang tertinggal, tetapi kuantitinya tidak banyak. Jika anda tidak menyedutnya, gas itu tidak membahayakan anda. Masuk, jalankan pemeriksaan dan terus keluar. Ia tidak mengambil masa lebih daripada 5 minit ".

- (i). Is this supervisor giving proper advice? Justify your answer.

Adakah penyelia ini memberi nasihat yang tepat? Terangkan jawapan anda.

(10 marks/markah)

- (ii). Explain **TWO (2)** relevant legislations and guidelines related to occupational safety and health that the supervisor and the worker need to refer to when conducting works in the confined space. You may refer to Appendix A.

*Jelaskan **DUA (2)** undang-undang dan garis panduan yang berkaitan dengan keselamatan dan kesihatan di tempat kerja yang perlu dirujuk oleh penyelia dan pekerja ketika menjalankan tugas di dalam ruang terkurung. Anda boleh merujuk kepada Lampiran A.*

(10 marks/markah)

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- (iii). Suggest and explain **THREE (3)** ways to reduce the hazards when working in the confined space.

*Cadangkan dan terangkan **TIGA (3)** cara untuk mengurangkan hazard apabila bekerja di ruang terkurung.*

(15 marks/markah)

- (d). In general, ergonomic hazard can be divided into 2 main categories: physical and mental stress. Explain **TWO (2)** types of working environment that contribute to **physical stress** and suggest **TWO (2)** ways to minimize the hazard.

*Secara amnya, hazard ergonomik boleh dibahagikan kepada 2 kategori utama: tekanan fizikal dan mental. Jelaskan **DUA (2)** jenis persekitaran kerja yang menyumbang kepada **tekanan fizikal** dan cadangkan **DUA (2)** cara untuk mengurangkan bahaya tersebut.*

(20 marks/markah)

- (7). Figure 2 shows an industrial accident occurred at workplace. In this accident, a grinder was used to cut the open cover of a machine to replace its internal parts. The machine contained transformer oil which was drained out prior to the cutting. During the cutting, a flash fire occurred, causing the cover of the machine to be blown off. One worker had severe head injuries and subsequently died in hospital. The second worker suffered from minor cuts.

Rajah 2 di bawah menunjukkan kemalangan industri yang telah berlaku di tempat kerja. Dalam kemalangan tersebut, pengisar digunakan untuk memotong penutup mesin bagi menggantikan bahagian dalamnya. Mesin tersebut mengandungi minyak pengubah yang telah dikeluarkan sebelum pemotongan. Semasa pemotongan, percikan api berlaku, menyebabkan penutup mesin itu terlempar. Seorang pekerja mengalami kecederaan parah di bahagian kepala dan kemudiannya meninggal di hospital. Pekerja kedua mengalami luka kecil.

...13/-

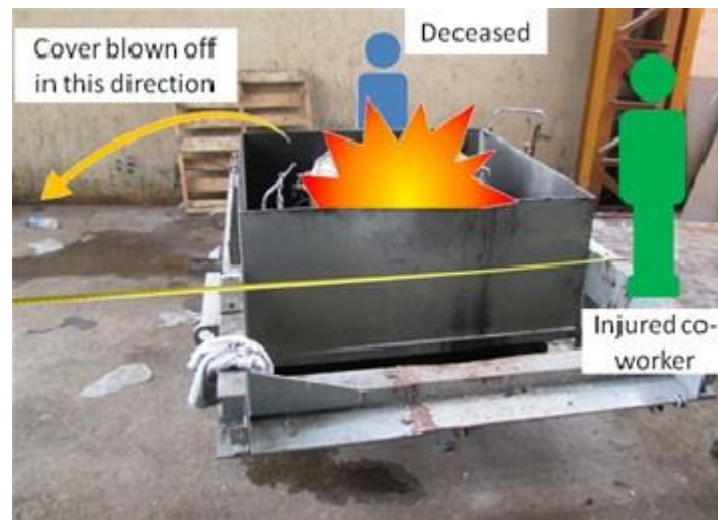


Figure 2: Unsafe Cutting Work Causes Fatality
(Source: WSH Buletin)

*Rajah 2: Kerja Pemotongan yang Tidak Selamat Menyebabkan Kematian
(Sumber: WSH Bulletin)*

You as a qualified Safety Officer were appointed by the management to investigate the case and to provide recommendations to prevent recurrence of the incident. You have interviewed the safety supervisor and few workers. A few facts have been summarized as listed below after the interview:

Anda sebagai Pegawai Keselamatan yang berkeelayakan telah dilantik oleh pihak pengurusan untuk menyiasat kes tersebut dan memberi cadangan bagi mencegah kejadian itu berulang. Anda telah menemu bual penyelia keselamatan dan beberapa orang pekerja. Beberapa fakta telah diringkaskan seperti yang disenaraikan di bawah selepas temu bual tersebut:

- The safety supervisor was not around when the incident happened as it was conducted during night shift. There is only one safety supervisor in that workshop.

Penyelia keselamatan tidak berada di tempat kejadian kerana tugas tersebut dilaksanakan semasa shif malam. Hanya seorang sahaja penyelia keselamatan dalam bengkel pada masa itu.

- The worker has just joined the company 3 months ago and he has not gone through any safety training.

Pekerja baru sahaja menyertai syarikat 3 bulan lalu dan dia belum lagi menyertai sebarang latihan keselamatan.

- The Risk Assessment (RA) was not available. The safety supervisor was not aware that RA is a necessary and it need to be conducted by the RA Team.

Penilaian risiko (RA) tidak tersedia. Penyelia keselamatan tidak menyedari bahawa RA diperlukan dan perlu dilaksanakan oleh Pasukan RA.

- (a). As a safety officer appointed to investigate the case, you are required to prepare the investigation report for the management.

Sebagai pegawai keselamatan yang ditugaskan untuk menyiasat kes tersebut, anda dikehendaki menyediakan laporan siasatan untuk pihak pengurusan.

- (i). Identify the parties accountable for the occurrence of the accident and justify your answer.

Kenalpastikan pihak-pihak yang bertanggungjawab atas kejadian kemalangan tersebut dan terangkan jawapan anda.

(15 marks/markah)

- (ii). Explain THREE (3) recommendations to prevent recurrence of the incident in your report.

Jelaskan TIGA (3) cadangan yang berkaitan untuk mengelakkan insiden berulang dalam laporan anda.

(15 marks/markah)

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- (b). As the current Risk Assessment (RA) was not available, you are required to draft an RA to be submitted to the management.

Oleh kerana penilaian risiko (RA) tidak tersedia, anda dikehendaki membuat draf RA untuk diserahkan kepada pihak pengurusan.

- (i). Suggest a risk matrix for your company.

Cadangkan matriks risiko untuk syarikat anda.

(30 marks/markah)

- (ii). Create a complete RA form (with 3 types of hazards) for activities involved in the case study.

Rangkakan borang RA yang lengkap (dengan 3 jenis hazard) untuk aktiviti-aktiviti yang terlibat dalam kajian kes ini.

(40 marks/markah)

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